University of Tampere

School of Health Sciences

UNINTENDED PREGNANCY AMONG CURRENTLY PREGNANT MARRIED WOMEN IN NEPAL

Kalpana Bastola

Master's thesis

School of Health Sciences

University of Tampere

(Public Health)

October 2013

ABSTRACT

University of Tampere
Tampere School of Health Sciences/Public Health
BASTOLA KALPANA: UNINTENDED PREGNANCY AMONG CURRENTLY PREGNANT MARRIED WOMEN IN NEPAL

Master's Thesis, pages: 55

Supervisor: Tarja I. Kinnunen, PhD

Health Sciences (Public Health)

October 2013

Background: Unintended pregnancy has been the issue for almost every woman irrespective of the place of residence and the level of development of the country. The consequences of unintended pregnancy are very severe for both the children and mothers socially, physically and psychologically. The aim of this study is to determine the prevalence of unintended pregnancy and factors associated with it among currently pregnant married women of Nepal.

Methods: The data for this study was taken from Nepal Demographic and Health Survey (NDHS) 2011which is a nationally representative cross sectional survey. The survey was conducted among all the women in the reproductive age group (15-49years). However, the present analysis is restricted to currently pregnant married women at the time of survey (N=798). A pregnancy was defined as unintended if the current pregnancy was mistimed or unwanted. The associations of unintended pregnancy with socio demographic variables were assessed by Chi-Square tests. Logistic regression analysis was used to assess the bivariate and multivariate association of unintended pregnancy with all the socio demographic variables.

Results: Most (92 %) of the women were from rural area and had no education (67 %) whereas nearly 60 percent of them depend on agriculture as their main occupation. More than half (54.5 %) of the currently pregnant women reported that their current pregnancy

was unintended. The final results indicate that older and educated women were less likely to experience unintended pregnancies. Unintended pregnancies were more common among women who were from poorer household (OR 4.83, 95% CI 2.64-8.86), women having more than two children (OR 6.15, 95 % CI 3.66-10.33) or women with the history of terminated pregnancy (OR 2.85, 95 % CI 1.70-4.70).

Conclusion: More than half of the pregnancies are unintended in Nepal which is already a serious issue. Consequences of unintended pregnancies affects throughout the life of mother and child. As the results reveals that younger and uneducated women, women with more than two children and women having the history of terminated pregnancy were more vulnerable to unintended pregnancy. Therefore, programs and policies should aim at these women to reduce unintended pregnancy.

Key words: Unwanted pregnancy, Nepal, DHS, Socio-demographic variables

Table of Contents

List of Tables

List of Figures

ABBREVIATIONS

CI:	Confidence Interval
DHS:	Demographic Health Survey
EA:	Enumeration Area
MDG:	Millennium Development Goals
MMR:	Maternal Mortality Ratio
NDHS:	National Demographic and Health Survey
OR:	Odds Ratio
SPSS:	Statistical Program for Social Science
UN:	United Nations
UNDP:	United Nations Development Program
WHO:	World health Organisation
VDC:	Village Development Committee

1. INTRODUCTION

Background

Family is the most important part of life for most of the people. Becoming pregnant and having a baby are the major events in the life of female as well as for the whole family. Pregnancy is the nine-month time period where a foetus grows inside mother's womb. During the normal pregnancy the mother has the higher health risks than non-pregnant women and when the pregnancy is unintended the risk increases further. Unintended pregnancy is such pregnancy when mother doesn't have any intention of becoming pregnant and giving birth. It is the persistent health issue affecting the lives of several women and children across the globe.

Unintended pregnancy is an important public health issue in both high income and also in low and middle income countries because of its negative association with the social and health outcomes for both mothers and children. Unintended pregnancy is one of the important factor contributing to high level of maternal and child morbidity and mortality. According to World Health Organisation (WHO), at least one woman dies from complications related to pregnancy or childbirth in every minute which accounts nearly 529 000 women a year. Furthermore, for every woman who dies in childbirth, around 20 more suffer injury, infection or disease which accounts to nearly 10 million morbidity each year (WHO, 2013). Unsafe abortion is one of the leading causes of maternal deaths and it accounts for nearly 13 percent of deaths (WHO, 2013). Maternal mortality ratio (MMR) has declined by half since 1990. However, in Eastern Asia, Northern Africa and Southern Asia it has declined by around two thirds. The MMR in developing countries is till 15 times higher than developed countries (UN, 2013). UN also reports that the unmet need for family planning is slowly being met for more women. However, the demand is increasing at very rapid rate (UN 2013).

WHO reports that about 16 million teenage girls and two million girls under the age of 15 give birth every year and most of them are from low and middle income nations. Around three million teenage girls in undergo unsafe abortions every year. Having babies during adolescence has several negative consequences for the health of the mother and infant. Adolescents are less likely than adults to obtain skilled care before, during and after childbirth especially in developing countries which increases the risk of morbidity and

mortality (WHO 2013). In low and middle-income settings, complications from pregnancy and childbirth are a leading cause of death among girls aged 15-19 years. Stillbirths and new born deaths are 50% more common among infants of adolescent mothers than among infants of women aged 20-29 years (WHO 2013). Unintended pregnancy remains one of the major reasons for induced abortion in adolescents.

United Nations (UN) millennium development goal (MDG) 5 is to improve maternal health. The targets of MDG 5 are to reduce the maternal mortality ratio by three quarters and achieve universal access to reproductive health (UN 2013). Providing all women access to high-quality family planning services would reduce unintended pregnancies, contributing directly to three MDGs: promoting gender equality and empowering women (MDG 3); reducing child mortality (MDG 4); and improving maternal health (MDG 5) (UN 2013).

There is very little published literature that focuses on the determinants of unintended pregnancy in low and middle income countries and particularly in Nepal, the country where this research is being carried out. Many studies have shown negative consequences of unwanted pregnancy to mothers and child's health. So this is a very important issue that needs attention from all the sectors of the society. Findings from the study are useful for formulating the relevant program and policies to address the issue.

The aim of this study is to find the prevalence of unintended pregnancy and the factors associated with it among Nepalese women whom are pregnant at the time of survey.

2. REVIEW OF LITERATURE

2.1 Literature search

For the purpose of literature review, literature search was carried out in Medline database by using key words "*unintended pregnancy*" in different combination with words "*unwanted child"* and "*unplanned pregnancy consequences*" and "*determinants"* with country specified as Nepal and some other south Asian and African countries. Literature search was also made through Google scholar using key words "*determinants unintended pregnancy*" and "*consequences unintended pregnancy*". Articles were carefully selected during the search. Articles and studies published after 1995 were only considered for this study.

2.2 Defining unintended pregnancy

Unintended pregnancy is defined as the situation when a pregnancy comes sooner than desired or when woman doesn't have any intention of having a baby (Johnson et al. 2004). According to Santalli (2003), unintended pregnancies are "pregnancies that are reported to have been either unwanted (i.e., they occurred when no children, or no more children, were desired) or mistimed (i.e., they occurred earlier than desired)". Unintended pregnancy can result directly from the contraceptive failure, less or inconsistent use of contraceptives, lack of knowledge on contraceptives and sometimes even rape (Kilma 1998).

Most studies have tried to define pregnancy intention by asking women to classify their pregnancies into the distinct categories of 'wanted' and 'unwanted' with a further distinction within the unwanted category between those that were mistimed (wanted later) or unwanted (not wanted at all). For the purposes of analysis, many researchers group the unwanted together. This thesis has used the term 'unintended' to encompass pregnancies that are both mistimed and unwanted.

2.3 Prevalence of unintended pregnancy

2.3.1 Prevalence of unintended pregnancy in high income countries

Unintended pregnancy is no longer the problem of only low or middle income countries. Women from high income countries are equally suffering from this problem. Table 1 summarizes the prevalence of unintended pregnancies in different countries.

Study conducted in UK found that half of all the pregnancies in UK were unintended, of which 22 percent were aborted (Henderson 2009). This study was conducted by Marie Stopes International in 2008 which included 1964 women in reproductive age (Henderson 2009). A review on the contraceptive failure rate for women experiencing unintended pregnancy reports that every second pregnancy in US and every third pregnancy in UK and France are reported as unintended (Black et al. 2010). A recent report published by American National Health Statistics analysing the intended and unintended pregnancy from 1982 to 2010 found that about 37% of births in the United States were unintended at the time of conception (Mosher et al. 2012). The report also explains that overall proportion of unintended pregnancy has not declined significantly since 1982. Another study was carried among 170 pregnant African American teens during their first prenatal visit in USA. Results shows that more than half (51.2%) of the pregnancies were unintended (Crosby et al. 2003). One earlier study from USA found that adolescents aged 15-19 years have the highest rates of unintended pregnancy, demanding for a continued focus on adolescents in efforts to reduce unintended pregnancy (Finer 2010).A study from Japan revealed that nearly half (46.2%) of the pregnancies were unintended and more than two fifths of them had repeated experience of unintended pregnancy (Goto et al. 2002). Analysis of 1255 pregnancies that the subjects had experienced shows that more than half (51.2%) had mistimed pregnancies whereas nearly a quarter (25.9%) had unwanted pregnancies (Goto et al. 2002).

Table 1: Literature review related to prevalence of unintended pregnancy and factors associated with unintended pregnancy

Author/Year/ Country	**Title of study**	**Study design/ Sample size (N)**	**Main findings**	
			Prevalence of unintended pregnancy	**Factors associated with unintended pregnancy**
Henderson D /2009/ UK	A third of women in UK who have an unintended pregnancy blame contraceptive failure	Cross sectional study N=1964	half of all pregnancies were unintended	Contraceptive failure, non-use of contraceptive
Black et.al /2010 Review report	Why women do experienced untimed pregnancies? A review of contraceptive failure rate	Review report		Contraceptive failure
Crosby et al. /2003/ USA	Correlates of unplanned and unwanted pregnancy among African-American female teens	Cross sectional study N=170	51.2 % pregnancies were unintended	lower levels of parental involvement in pregnancy, already having a child and younger women
Goto et al. /2002/Japan	Factors associated with unintended pregnancy in Yamagata, Japan	Cross sectional study N= 564	46.2% of the respondents had experienced unintended pregnancy	Age of the husband ≥ 4 years older, age of initiation of sexual intercourse and teenage marriage

Lako and Geda/2011/ Ethiopia	Unintended pregnancy among married women in Southern Ethiopia	Cross sectional study N=713	About 43 % of the respondent had their recent pregnancy unintended	Lack of knowledge, husband disapproval, contraceptive failure, age at marriage, exposure to radio, discussion of family planning issues with husband, autonomy on owns health
Gessessew, A/ 2010/ Ethiopia	Abortion and unwanted pregnancy in Adigrat zonal hospital, Tigray, North Ethiopia	Cross sectional study N=907	Nearly 70 % of the respondents had unwanted pregnancy	Lack of use of modern contraceptive use
Jaeni N , Mcdonalds P, Utomo ID/2009 /Indonesia	Determinants of unintended pregnancy in ever married women in Indonesia: an analysis of IDHS 2007	Cross sectional study, DHS data N=15,127	Almost 20 % of the pregnancies were unintended	preceding birth interval, age of mother, educational attainment, and number of previous births and place of residence
Che Y and Cleland J /2004/China	Unintended pregnancy among newly married couples in Shanghai	Longitudinal study N=7872	21 % of pregnancy of first birth were unintended	Contraceptive failure
Johnson K, Zoubi O and Wulfe M/ 2004 /Jordan	Mistimed and unwanted pregnancies in Jordan	Cross sectional study, N=3881	Nearly 40 % of the pregnancies were unintended	
Adhikari et al./	Correlates of	Cross	41 % of the	age of women, age at

2009/ Nepal	unintended pregnancy among currently pregnant married women in Nepal	sectional study N = 723	currently pregnant women reported their pregnancy as unintended	first marriage, ideal number of children, religion, exposure to radio and knowledge of family planning methods were associated with unintended pregnancy
Eggleston E /2004/ Ecuador	Unintended pregnancy and women's use of prenatal care in Ecuador	Cross sectional study, DHS data N=3988	Almost 38 % of the last pregnancy were unintended	
Shapiro M et al./2005/Bolivia	Parental pregnancy intention and early childhood stunting: findings from Bolivia	Cross sectional study, DHS data N=3126	33 %children were born from unwanted pregnancy and 21 % from mistimed pregnancy.	
Sable MR et.al/ 2007/ USA	Social well-being in pregnant women: intended versus unintended pregnancy	Cross sectional study N=72		Pregnancy intention was significantly associated with the reduced social support.

2.3.2 Prevalence of unintended pregnancy in low and middle income countries

Table 1 provides the overview of prevalence of unintended pregnancy in various countries. A study conducted about unintended pregnancy among married women in Southern Ethiopia found that among 713 respondents, about 43 percent had their recent pregnancies

unintended (Lako & Geda2011). Another cross sectional study conducted in Ethiopia among the 907 patients seeking abortion services in Adigrat zonal hospital, Tigray Region, Ethiopia revealed that nearly 70 percent of the pregnancies were unintended (Gessessew 2010). High incidences of complication in patients with unwanted pregnancies were also reported in their study (Gessessew 2010). In the study conducted among ever married Indonesian women, of the 15,127 births, 19.9 percent were classified as unintended (11.9 % mistimed and 8.0 % unwanted). Majority of the respondents belonged to the 25-34 age groups (Jaeni, Donalds & Utomo 2009).

One earlier study was conducted among 7,872 newly married couples in China who were enrolled between 1987 and 1988 and were followed up until 1994-1995. The study found that 21percent of pregnancies occurring between marriage and first births were reported as unintended (Che & Cleland 2004). The majority of unintended pregnancies were carried to full term whereas 13 percent of them were terminated. Younger women have a longer desired interval between marriage and conception and the likelihood of any unintended pregnancy occurring before the first birth was found to be greater. After first birth, 43 percent of couples experienced one or more unintended pregnancies, 98% of which were aborted in accordance with the one-child policy. The majority of these pregnancies occurred in the 12 months after first birth. (Che & Cleland 2004). Another study was conducted in Jordan by Jordan Population and Family Health Survey in 2001 among ever married women in reproductive age group. Total respondents participating in the survey were 3,881. The study was restricted to women who had given birth in five years preceding the survey and women who were currently pregnant at the time of survey. The study revealed that nearly 40 percent of the pregnancies were unintended (Johnson et al. 2004). A study conducted on 723 currently pregnant women in Nepal shows that more than two fifths of the respondents had their current pregnancy unintended (Adhikari, Soonthorndhada & Prasartkul 2009). Study from Ecuador found that nearly two fifths of the last pregnancies were unintended (Eggleston 2004). The study was based on the analysis of DHS data which included 3988 respondents.

2.4 Factors associated with unintended pregnancy

2.4.1 Contraceptive failure

In the literature review related to the factors associated with unintended pregnancy, it was observed that contraceptive failure was one of the most important factors (Table 1). Contraceptive failure refers to incorrect or inconsistent use of a method or lack of use of any form of contraception (WHO 2013). Despite the widely available family planning effort to reduce unwanted pregnancy, the rate of unintended pregnancy is still significantly large (WHO 2013). Incorrect or inconsistent use of contraceptive contribute to the greater proportion of unintended pregnancy especially in developed countries however, in developing world lack of access to contraceptive is the underlying reason (WHO 2013). In the USA, half of the unintended pregnancies were the results of contraceptive failure whereas almost two-thirds of unintended pregnancies in France are due to the results of contraceptive failure (Black et al. 2010). In the low and middle income countries, contraceptive failure accounts to nearly 15 percent (WHO 2013). One earlier study from UK found that 34 percent of women with unintended pregnancy blamed contraceptive failure (Henderson 2009). Incorrect and inconsistent use of the pill and the male condom are the main reasons for the contraceptive failure in UK (Henderson 2009). Same research shows that 22% of women who had an unintended pregnancy do not use regular contraception and that more than a third admitted not using contraception during the intercourse that led to an unintended pregnancy (Henderson 2009). Study from Japan reveals that main reason for unwanted pregnancy in Japan was lack of contraceptive use (Goto et al. 2002). Research from China found that 81 percent of unintended pregnancies were the result of contraceptive failure (Che & Cleland 2004). In Nepal 20 percent of rural and 16 percent of urban married women aged 15–49 reported method failure as the reason for their unintended pregnancy (Adhikari et al. 2009).Among college students in Nepal only about half of the male students (55%) had used condom at the first premarital sexual intercourse (Adhikari et al. 2009).

WHO has estimated that nearly 222 million women in developing world would like to delay or stop childbearing but do not have access to any method of contraception (WHO 2013). The unmet need for contraception remains too high in developing countries. More

than half of the African women (53%) of reproductive age have unmet needs for modern contraception (WHO 2013).

2.4.2 Socio-demographic and pregnancy related factors

Table 1 provides the overview of different factors associated with unintended pregnancy. In Ethiopia, it was found that lack of knowledge, disapproval by husband, difficulty to get method and contraceptive method failure were associated with unintended pregnancy (Lako & Geda 2011). Furthermore the women who discuss about family planning issues with husband, those who have autonomy on their health care and those visited by family planning worker were less likely to have unintended pregnancy (Lako & Geda 2011). Women exposed to radio (lako & Geda 2011; Adhikari et al. 2009) and those having the higher level of knowledge in family planning were less likely to experience unintended pregnancy (Adhikari et al. 2009). In USA, unmarried women, black women, and women with less education or income are more likely to experience unintended births compared with married, white, college-educated, and high-income women (Mosher et al. 2012). Another study from USA found that adolescents having lower level of parental involvement were twice as likely to have unintended pregnancy (Crosby et al. 2003).

The numbers of past unintended pregnancies were significantly correlated with the number of pregnancies, live births and abortions (Goto et al. 2002).Women with already one child and less than 18 years of age were more than twice as likely to experience unintended pregnancy (Crosby et al. 2003). Study from Indonesia revealed the strong association between pregnancy intention status and maternal age. Women aged 15-24 years old were less likely to have unintended pregnancy compared to those aged 25–34 years old. Moreover, those aged 35-49 years old were most likely to report unintended pregnancy (Jaeni et al. 2009). It revealed that the higher the age of mother, the higher the odds of experiencing an unintended pregnancy. Number of previous births or parity was also strongly related with the odds of unintended pregnancy. The more children a mother already had, the more likely she was to classify her pregnancy as unintended (Jaeni et al. 2009). Women having less parity were less likely to experience unintended pregnancy (Lako & Geda, 2011). Research from Nepal indicates that with an increase in women's

age, the odds of women experiencing unintended pregnancy also increases (Adhikari et al. 2009). Furthermore, same research reveals increase in age at first marriage reduces the likelihood of unintended pregnancy among women (Adhikari et al. 2009). Research from Ethiopia also found that women with delayed age at marriage were less likely to experience unintended pregnancy (Lako & Geda 2011).

2.5 Consequences of unintended pregnancy

Various studies reveal that unintended pregnancy is linked with the increase in the morbidity and mortality in women and also with neglect in the care of child (Gessessew 2010; Singh 2012: David 2011: Cheng et al. 2009: Shapiro-Mendoza et al. 2005; Goto et al. 2005). A study conducted in rural India on the consequences of unintended pregnancy revealed that mothers reporting unwanted births were more likely (OR 2.32) than mothers reporting wanted births to receive inadequate prenatal care (Singh, Singh & Mahapatra 2013). In USA, women with unintended pregnancies were less likely to initiate prenatal care during the first trimester (OR 0.34) compared to women with intended pregnancies (Cheng et al. 2009). In Ecuador, women with unwanted pregnancies were 32 percent less likely than women with planned pregnancies to seek prenatal care. They were also 25 percent less likely to initiate care in first trimester and 29 percent less likely to receive at least an adequate number of visits (Eggleston 2000). In Kenya and Namibia, women with unintended pregnancies had fewer prenatal care visits than women with planned pregnancies (Eggleston 2000). Study on relationship between unintended pregnancy and low birth weight in Ecuador among 2490 mothers found that infants from unwanted pregnancies were more likely than infants from planned pregnancies to have low birth weight (OR 1.64) (Eggleston, Tsui & Kotelchuck 2001). In USA, mothers with unintended pregnancies were more likely to consume less than the recommended amount of preconception folic acid (OR 2.39) (Cheng et al. 2009).

Study from Ethiopia provides evidence that unwanted pregnancy is associated with increased risk of maternal morbidity and mortality (Gessessew 2010). A study from USA revealed that women with unwanted pregnancies were more likely to smoke prenatally

(OR 2.03) and smoke postpartum (OR 1.86) compared to women with wanted pregnancies (Cheng et al. 2009). Moreover, they were more likely to report postpartum depression (OR 1.98) (Cheng et al. 2009). Earlier study on the social well-being on intended versus unintended pregnancy in USA found that pregnancy intention of women was significantly associated with the social support. Feeling happiness on having the baby were positively associated with all the domains of social support and negatively associated with family relationship problems and loneliness (Sable et al. 2007). Research from Bangladesh on intimate partner violence and unwanted pregnancy, miscarriage, induced abortion and stillbirth among a national sample of Bangladeshi women found that three out of four Bangladeshi women experience violence from husband, women experiencing violence are more likely (OR 1.54) to have unwanted pregnancy (Silverman et al. 2007).

One of the famous studies on the consequences of unintended pregnancy is "The Prague study". This study followed the development and mental well-being over 35 years of 220 children born between 1961 and 1963 in Prague, Czech Republic, to women twice denied abortion for the same unwanted pregnancy. Children were individually pair-matched at age 9 with 220 children born from accepted pregnancies. Five follow-up studies were conducted. Findings showed that differences in the psychological development between the subjects widened in time but were observed lesser in mid 30s. It was also observed that child from unwanted pregnancy are more prone to psychological problems compared to their siblings. Overall negative psychosocial development and mental well-being in adulthood was observed in children born from unwanted pregnancy (David 2011).Cohort study from Northern Finland on unwantedness of pregnancy and schizophrenia in child found that a cumulative incidence of 0.7 percent in children born from normal pregnancy compared with 15% for those born from unwanted pregnancies. The risk of later schizophrenia among unwanted children was raised compared with wanted or mistimed children (Myhrman et al. 1996). The results suggest that unwantedness may operate either directly as a psychosocial stress during development making children more liable to schizophrenia, or it may be a marker for behaviours associated with risk in either the mother or the child (Myhrman et al. 1996).

Study from Fukushima Japan reveals the relationship between pregnancy intention and parenting difficulties. It was observed that when the pregnancy was unintended, mother have some feelings towards child abuse (OR 5.2) and mother was unlikely to discuss about child rearing with the husband (OR 3.1) and family members (OR 3.3) (Goto et al. 2005).

In India, children from unwanted pregnancies were more likely (OR 1.38) to receive inadequate childhood vaccination (Singh, 2012). Likewise, unintended births had 83 percent higher risk of neonatal mortality compared to intended births (Singh 2012). Another study was conducted in Bolivia to see the relation between pregnancy intention and early childhood stunting. The study compromised of more than half of the sample of children born from unwanted and mistimed pregnancies (33% and 21% respectively). The study found that nearly 29 percent of unwanted children were stunted as compared to 19 percent among intended and 19 percent among mistimed children. Children in age group 12–35 months (toddlers) from mistimed pregnancies prevalence risk ratio (PR 1.33) and unwanted pregnancies (PR1.28) were at about a 30% greater risk for stunting than children from intended pregnancies. Infants and toddlers with both parents reporting them as unwanted had an increased risk of being stunted as compared with children both of whose parents intended the pregnancy (Shapiro-Mendoza et al. 2005).Study from USA on the initiation and duration of breastfeeding reveals that women with unintended pregnancy were less likely to initiate and continue breast feeding to their baby than women with intended pregnancy (Taylor& Cabral 2002).Study found that nearly 52 percent of women never breastfed, 48.5 percent initiated breastfeeding and 26.4 percent continue breastfeeding for at least 16 weeks (Taylor & Cabral 2002). Breastfeeding is the best source of nutrition to the young children and breastfed children are less likely to be obese in their later life (WHO 2013). US women with unwanted unintended pregnancies were more likely not to initiate breastfeeding (OR 1.76, CI 1.26-2.44) and more likely not to continue breastfeeding (OR 1.69, CI 1.12-2.55) then women with intended pregnancy (Taylor &Cabral 2002). Another study from USA found that mothers with unwanted pregnancies were less likely to breastfeed for 8 or more weeks (Cheng et al. 2009).

4.6 Conceptual Framework

Figure 1 describes the conceptual framework of the study. Socioeconomic variables like women's age, place of residence, region of residence, wealth index, educational status, partners educational level, occupation and women's autonomy are independent variables. Pregnancy related variables such as age at cohabitation, age at first birth, children ever

born, ideal number of children, terminated pregnancy and knowledge and use of contraceptives are the intermediate variables. These independent and intermediate variables directly or indirectly affect the outcome variable i.e. unintended pregnancy.

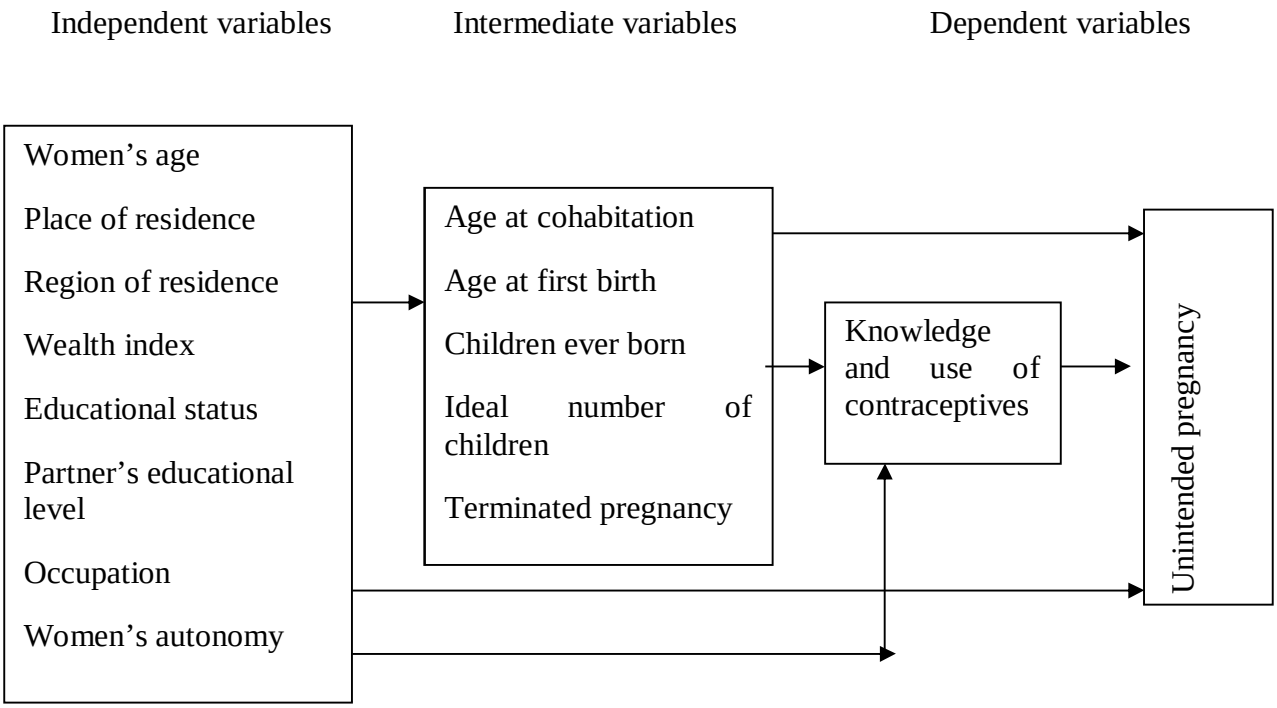

Figure 1: Conceptual framework

Source: Developed by author based on literatures, 2013

3. AIMS AND OBJECTIVES

The main aim of this study is to determine the prevalence and factors associated with the unintended pregnancy among married women who were currently pregnant at the time of survey in Nepal. The specific objectives of the study are as follows:

- To determine the prevalence of unintended pregnancy in Nepal
- To study the association of unintended pregnancy with various socio-demographic factors in Nepal.

4. MATERIALS AND METHODS

4.1 Study area

Nepal is a small country with land area of 141, 181 square kilometres neighbouring India in east, west and south and China in north. Topographically, Nepal is divided into three distinct ecological zones: Mountain, Hill, and Terai (figure 2). The mountain zone accounts for 35 percent of the total land area. Only about 7 percent of the population resides in mountain because of the harsh geographical distribution, low level of transportation and communication facilities. In the Hill ecological zone, about 43 percent of the total population resides and it occupies 42 percent of the total land area. This zone includes the capital, Kathmandu Valley, the country's most fertile and urbanized area. The Terai zone in the southern part of the country can be regarded as an extension of the relatively flat plains and fertile soils. While it constitutes only 23 percent of the total land area in Nepal, 50 percent of the population resides in Terai (NDHS 2011).

The total population of the country is nearly 30 million. Gross national income per capita (international $) is 1,260. Life expectancy at birth for male is 67 whereas 69 years for female. Probability of dying under five years is 48 per 1000 live births. Maternal mortality ratio per 100,000 live births is 170. Total expenditure on health per capita (International $, 2011) is 68 (WHO, 2013). Agriculture is the major occupation, with 76percent of households involved in agricultural activities. Remittances have become one of the foremost sources of income in Nepal, with nearly 56 percent of households receiving some sort of remittance (NDHS2011).

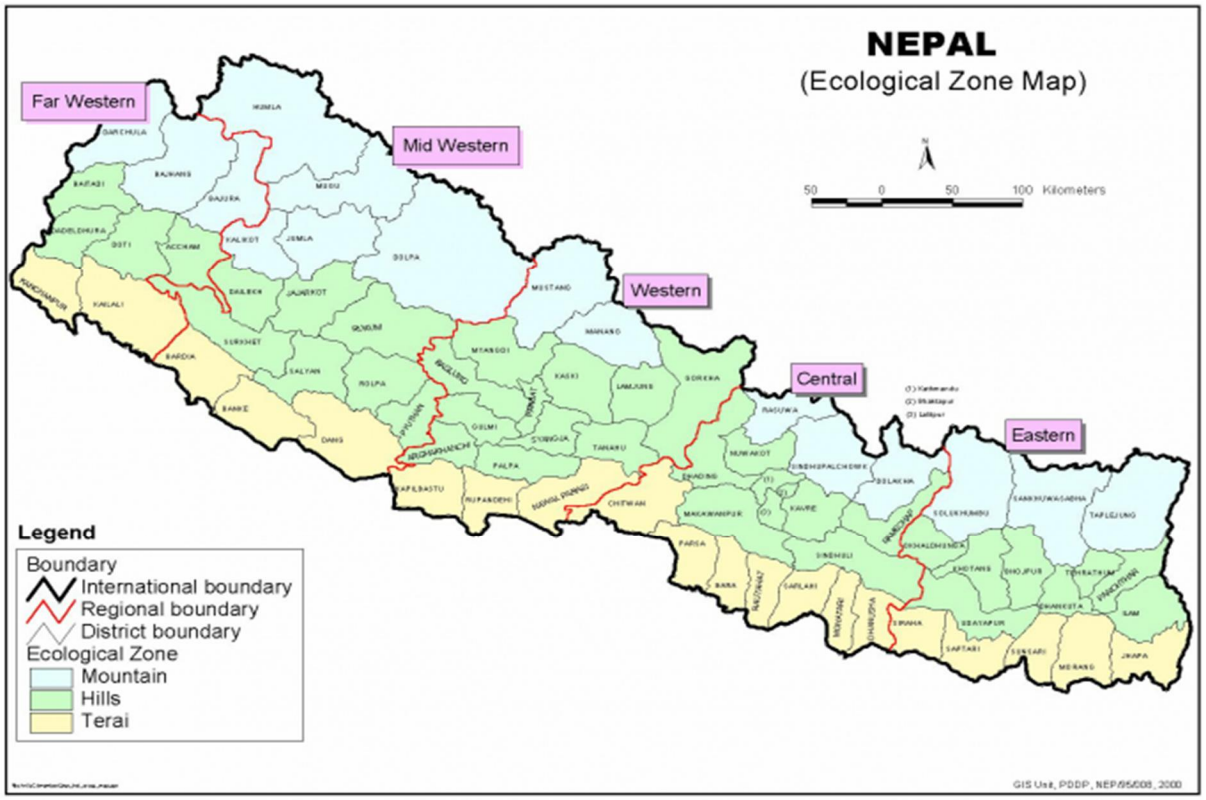

Figure 2: Map of Nepal

Source: Downloaded from reliefweb.int/map/Nepal/Nepal-ecological-zone-map 2000

4.2 Data Source

This study is based on the data from National Demographic and Health Survey (NDHS) 2011which was carried out in Nepal. The 2011 NDHS is the fourth nationally representative comprehensive survey conducted as part of the worldwide DHS project in the country. The principal objective of the 2011 Nepal Demographic and Health Survey (NDHS) was to provide current and reliable data on fertility and family planning, child mortality, children's nutritional status, utilization of maternal and child health services, domestic violence, and knowledge of HIV/AIDS. Ethical permission for the study was obtained from Nepal Health Research Council (NHRC). Informed verbal consent was taken from all the participants prior the interview.

4.3 Sampling methods

The country is broadly divided into three horizontal ecological zones, namely Mountain, Hill, and Terai. Vertically, the country is divided into five development regions. The cross section of these zones and regions results in 15 eco-development regions, which are referred to in the 2011 NDHS as sub-regions or domains. Due to the small population size in the mountain regions, the Western, Mid-western, and Far-western mountain regions are combined into one domain, yielding a total of 13 domains. The vast majority of the population in Nepal resides in the rural areas. In order to provide national urban estimates, urban areas of the country were oversampled.

Samples were selected independently in each stratum through a two-stage selection process. In the first stage, Enumeration Areas (EAs) were selected using a probability-proportional-to-size strategy. In order to achieve the target sample size in each domain, the ratio of urban EAs to rural EAs in each domain was roughly 1 to 2, resulting in 95urban and 194 rural EAs (a total of 289 EAs).Complete household listing and mapping was carried out in all selected EAs (clusters). In the second stage, 35 households in each urban EA and 40 households in each rural EA were randomly selected. Due to the non-proportional allocation of the sample to the different domains and to oversampling of urban areas in each domain, sampling weights are required for any analysis using the 2011 NDHS data to ensure the actual representativeness of the sample at the national level as well as at the domain levels. Since the 2011 NDHS sample is a two-stage stratified cluster sample, sampling weights were calculated based on sampling probabilities separately for each sampling stage, taking into account non-proportionality in the allocation process for domains and urban-rural strata.

4.4 Study population

This study is focused only on the currently pregnant married women at the time of survey. This study is mostly based on the women's questionnaire. However, few background variables have been used from household questionnaire. Interviews were completed for 12,674 women, resulting in a response rate of 98 percent. Numbers of eligible women interviewed from urban area were 3,701 and from rural area were 8,973. Out of these respondents only 798 were currently pregnant at the time of survey, which is the total population for this particular study.

4.5 Methods of data collection

Data was collected by interview based on the questionnaires. Three questionnaires were administered in the 2011 NDHS: the household questionnaire, the woman's questionnaire, and the man's questionnaire. These questionnaires were adapted from the standard DHS6 core questionnaires to reflect the population and health issues relevant to Nepal at a series of meetings with various stakeholders from government ministries and agencies, nongovernmental organizations and international donors. These questionnaires were then translated from English into the three main local languages—Nepali, Maithali, and Bhojpuri—and back translated into English. Questionnaires were finalized after the pre-test.

The Household Questionnaire was used to list all of the usual members and visitors in the selected households. Some basic information was collected on the characteristics of each person listed, including age, sex, education, and relationship to the head of the household. The Household Questionnaire was used to identify women and men who were eligible for the individual interview.

4.6 Description of the study variable

4.6.1 Unintended pregnancy

The outcome variable of the study is unintended pregnancy (Table 2). Intended pregnancy refer to all those pregnancies where women always wanted baby when they became pregnant (wanted) whereas, unintended pregnancy refer to the sum of all those pregnancies where women doesn't want to have baby when they became pregnant (mistimed) and those who doesn't want baby at all (unwanted).

Unintended pregnancy was measured by the question, "At the time you became pregnant, did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all?" The three allowed options were wanted then (planned), wanted the pregnancy to happen later (mistimed) and did not want at all (unwanted). For this particular study, those respondents who mentioned their current pregnancy was either mistimed or unwanted were merged and consider as 'unintended pregnancy' otherwise the pregnancy was regarded as intended (Table 2).

4.6.2 Pregnancy and autonomy related variables

Variables like, age at cohabitation, age at first birth, children ever born, ideal number of children, history of terminated pregnancy, knowledge of family planning, person deciding on respondent's health care and person deciding on large household expenses were the variables used in the analysis (Table 2).

Instead of age at marriage, age at cohabitation variable was used because all the women do not start to live with their husband right after the marriage. This variable was merged and only two categories were formed as, before the age of 20 and after the age of 20. Age of twenty was set as the demarcation since national policies guides women to get married and have children only after the age of 20. Age at first birth was also categorised following the same procedure.

Knowledge on family planning variable is created by combining responses from three different questions, have you heard about family planning on radio in few months? Have you heard about family planning on TV in few months? Have you heard about family planning in newspaper/magazine in last few months? Responses from these three questions were combined and final score was given. Response with less than two score was categorised as no knowledge, options with three to four score was little knowledge and more than four score was categorised as more knowledge (Table 2).

4.6.3 Socio-demographic variables

Table 2 describes the different socio-demographic variables that were used in the analysis. Variables like age of the respondent, place of residence, region of residence, educational level, occupation, wealth index and partners educational level were the socio demographic variables used in the analysis. Several responses on the occupation have been merged only to three categories, namely, not working, agriculture and service/ sales.

According to MEASURE DHS, 2013 “The wealth index is a composite measure of a household's cumulative living standard generated with a statistical procedure known as principal components analysis, the wealth index places individual households on a continuous scale of relative wealth. The wealth index is calculated using easy-to-collect data on a household’s ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities. The wealth index places individual households on a continuous scale of relative wealth. DHS separates all interviewed households into five wealth quintiles to compare the influence of wealth on various population, health and nutrition indicators”.

Table 2: Operational definition of variables and their categorisation

Variables	Description	Categories
Unwanted pregnancy	Type (intendness) of pregnancy	1= wanted then 2 = wanted later and not at all
Age	Complete age of women at the time of survey	1 = 15-24 2 = 25-34 3 = 35-49
Place of residence	Place of residence	1= urban 2 = rural
Wealth index	A composite measure of a household's cumulative living standard.	1 = poorest 2 = poorer 3 = middle 4 = richer 5 = richest
Occupation	Type of women's work	0 = not working 1 = agriculture 2 =services/sales
Educational level	Women's educational status	0 = no education 1 = primary 2 = secondary and higher
Partners educational level	Educational level of husband of respondent	0 = no education 1 = primary 2 = secondary and higher
Age at first cohabitation	Respondents completed age at the time when she start to live together with her husband	1 = ≤20 2 = > 20
Age at first birth	Respondents' completed age at the time of first birth	1 = ≤20 2 = > 20
Children ever born	Number of children given by the respondents	1 = ≤2 2 = > 2
Ideal number of children	Women's concept or preferences about the number of Children	0 = none 1 = ≤2 2 = > 2
Terminated pregnancy	If women had the history of terminated pregnancy (abortion)	0 = no 1= yes
Person deciding on	Autonomy on own health	1= respondent

respondents health care (Women's autonomy)	care	alone 2 = respondent and partner 3 = partner alone 4 = someone else
Person deciding on large household expenses (Women's autonomy)	Autonomy on how to spend on purchase of large household items	1= respondent alone 2 = respondent and partner 3 = partner alone 4 = someone else
Information on family planning	Knowledge score on family Planning method heard from different sources	1 = no knowledge 2 = little knowledge 3 = more knowledge

4.6 Data Analysis

Frequency, percentages, means (SD), and pie chart have been used to describe the distribution of study variables. Cross tabulation with Pearson chi square test was utilised to test the association between pregnancy related or socio-demographic variables and pregnancy intention. The bivariate and multivariate logistic regression analyses was used to investigate the relationship between women's pregnancy intention status and a number of socio-demographic and pregnancy related variables (maternal age, place of residence, region of residence, wealth index, educational level, partners educational level, occupation, age at cohabitation, age at first birth, number of previous children, ideal number of children, history of terminated pregnancy, knowledge on family planning, persons deciding on respondents health care and person deciding on large household expenses). The multivariate logistic regression analysis were used to identify the variables which are simultaneously associated with the women's pregnancy intention status ($P<0.05$). Odds Ratio (OR) and 95% confidence intervals (CI) was calculated for different logistic regression models (Model I, Model II and Model III).Model I represents unadjusted model

by enter method, Model II represents simultaneously adjusted model for all study variable whereas Model III represents simultaneously adjusted model for all study variables using backward conditional method. All statistical tests were done using the Statistical Package for Social Sciences (SPSS for windows version 17). A weighing factor was applied to the descriptive observation in study analysis to balance 2011 NDHS regional response rate and also sampling design (MEASURE DHS, 2013). Therefore, only the descriptive findings presented herein are weighted.

5. RESULTS

Table 3 describes the demographic characteristics of the respondents. Out of the total study population, more than half were in age group 25-34 years. About 30 percent were in age group 15-24 years. Mean current age of respondent was 28.21 years (SD =5.949). Among all the respondents, majority lived in the rural area (92 %). Nearly half of them resides in Terai and two fifth in the Hilly region. Nearly two third of respondents were not educated. Nearly one fifth of the respondents have completed secondary and higher education. Nearly 60 percent of the population work in the agricultural sector, one third of them represents non-working population. According to quintile of wealth index, most of the women were poorest (39.4 %) whereas 11.6 percent of women were in the richest category. Nearly 69 percent of the partners of the study population had some education.

Table 3: Demographic characteristics of respondent

Variables	**Number N=771 (weighted)**	**percentage**
Age of women (years)		
15-24	233	30.2
25-34	426	55.3
35-49	112	14.5
Place of residence		
Rural	709	92.0
Urban	61	8.0
Region of residence		
Mountain	83	10.8
Hill	308	39.9
Terai	380	49.3
Educational level		
No education	512	66.5
Primary	119	15.4

Secondary and higher	139	18.1
Occupation		
Do not work	255	33.0
Agricultural sector	460	59.7
Services/ Sales	56	7.2
Wealth index		
Poorest	304	39.4
Poorer	154	20.0
Middle	145	18.8
Richer	78	10.1
Richest	90	11.6
Partner educational level		
No education	244	31.6
Primary	249	32.4
Secondary and higher	277	36

Figure 3 shows the original distribution of unintended pregnancy variable which explain that only 45.5 percent of women actually wanted to become pregnant when they became pregnant whereas 14 percent of them wanted to become pregnant later in near future and two fifth of respondent never wanted to become pregnant anymore.

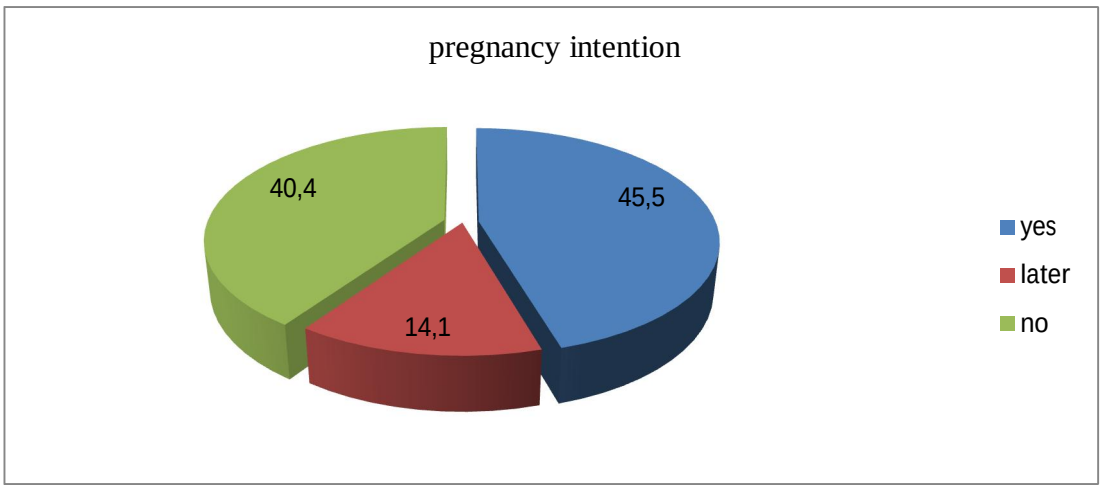

Figure 3: Pregnancy intention

Table 4 describes the distribution of respondents by pregnancy and autonomy related variables. Nearly 90 percent of the respondents started to live together before age of 20. Nearly 70 percent of them already had baby before age of 20. Almost two third of the respondents had more than two children ever born. Mean age at cohabitation and age at first birth were 16.64 years (SD = 3.136) and 19.02 years (SD=3.294) respectively. When the women were asked how many children they want, nearly 85 percent of the responses were none. Almost 18 percent of women have the history of terminated pregnancy and two third of the women had at least some knowledge of family planning.

Respondent's alone decision making in their own health care was found among only 15 percent of women. One third of their partners were responsible for making decision on the health care seeking for the respondent. Almost two fifth of the decision were made on the mutual understanding of husband and wife. Similarly the decision making on the purchase of large household goods, nearly one fifth of the respondents decide alone (respondent alone) on these matters, which is little higher than decision making in their health.

Table 4: Distribution of respondent by pregnancy and autonomy related variables

Variables	**Number N=771**	**percentage**
Age at first cohabitation (years)		
≤20	692	89.8
>20	78	10.2
Age at first birth (years)		
≤20	538	69.9
>20	231	30.1
Children ever born		
≤2	333	43.2
>2	438	56.8
Ideal number of children		
None	649	84.2

≤2	101	13.0
>2	21	2.7
Terminated pregnancy		
No	634	82.2
Yes	137	17.8
Knowledge on Family planning*		
No knowledge	187	33.8
Little knowledge	200	36.2
More knowledge	165	29.8
Person deciding on respondents health care		
Respondent alone	112	14.5
Respondent and partner	290	37.7
Partner alone	263	34.1
Someone else	105	13.7
Person deciding on large household expenses		
Respondent alone	152	19.7
Respondent and partner	226	29.4
Partner alone	235	30.6
Someone else	156	20.2

*excludes missing value

Table 5 describes pregnancy intention by demographic variables. When unintended pregnancy compared with age of the respondents, highest prevalence of unintended pregnancy (66%) was observed in the oldest (35-49 years) group and lowest was observed among the youngest age group (15-24 years) group. Women residing in rural area had higher prevalence of (57%) unintended pregnancy than the women residing in urban area (41%). The prevalence of unintended pregnancy was almost same with the respondents living in Hill and Terai region whereas, it was found quite high in Mountain region (65 %).

Wealth index was significantly associated with unintended pregnancy. As the economic status of the respondent's increases, decreasing trend of unintended pregnancy was reported. In the poorest and poorer quintile of the wealth index category, unintended pregnancy was highest, i.e. 58.4 percent and 70.9 percent respectively. Nearly 63 percent of uneducated women had unintended pregnancy whereas for women with secondary and

more education the prevalence of unintended pregnancy is higher than women with primary education. As the educational level of respondent's partner increases, unintended pregnancy seems to decrease. Not much difference in the prevalence of unintended pregnancy was observed between uneducated partners and partners with primary education. The prevalence of unintended pregnancy was highest in the women working in the agricultural sector i.e. 59 percent whereas among those working in sales and service category, it was only 32.8 percent.

Table 5: Pregnancy intention by demographic characteristics

Independent variables	**Pregnancy intention**	***P value***
	Unintended N=420 (%)	
Age of women (years)		< 0.001
15-24	95 (42.8)	
25-34	254 (56.2)	
35-49	81 (65.3)	
Place of residence		0.001
Rural	375(56.6)	
Urban	55 (40.7)	
Region of residence		0.001
Mountain	124(64.9)	
Hill	171 (52.6)	
Terai	135 (47.9)	
Wealth index		< 0.001
Poorest	219 (58.4)	
Poorer	105 (70.9)	
Middle	51 (44.7)	
Richer	34 (47.9)	
Richest	21 (23.3)	
Educational level		< 0.001
No education	309 (62.4)	

Primary	47 (34.6)	
Secondary and higher	74 (44.3)	
Partners educational level		< 0.001
No education	141 (62.1)	
Primary	165 (64.0)	
Secondary	124 (39.6)	
Occupation		< 0.001
Not working	75 (42.9)	
Agriculture	335 (59.6)	
Services/ Sales	20 (32.8)	

Table 6 shows the pregnancy intention by pregnancy and autonomy related variables. The prevalence of unintended pregnancy was higher (56%) in those women who started cohabitation before the age of 20 years compared to those women who start cohabitation after 20 years (41 %). Same kind of trend was observed with the women giving birth before the age of 20, nearly 60 percent of women giving birth before age of 20, had reported unintended pregnancy. Women who had already given birth more than 2 children had reported high prevalence of unintended pregnancy (68.9 percent) then compared to those who have less than or two children (33.1 percent). No difference was found between ideal number of children and unintended pregnancy. Of the respondent who had the history of terminated pregnancy, they had higher prevalence of unintended pregnancy (65 %) compared to women with no history of terminated pregnancy.

The prevalence of unintended pregnancy was found to be higher in those cases when the respondent health care seeking was decided by both the respondent and partner (61.5 %). When it was decided by partner alone, it is also comparatively higher (57 %) compared to the decision made by respondent alone (43 %) and someone else (32 %). Similar relation had been observed between the unintended pregnancy and person deciding for large household expenses. No difference of association was observed between information on family planning and unintended pregnancy.

Table 6: Pregnancy intention by pregnancy and autonomy related characteristics

Independent variables	**Pregnancy intention**	***P value***
	Unintended N=420 (%)	
Age at first cohabitation (years)		0.011
≤20	396 (55.5)	
>20	34(40.5)	
Age at first birth (years)		< 0.001
≤20	323 (57.9)	
>20	107 (44.6)	
Children ever born		< 0.001
≤2	111(33.1)	
>2	319 (68.9)	
Ideal number of children		0.526
None	368 (54.4)	
≤2	49 (49.0)	
>2	13 (59.1)	
Terminated pregnancy		0.003
No	326(51.3)	
Yes	104 (64.2)	
Person deciding on respondents health care		< 0.001
Respondent alone	52 (43.0)	
Respondent and partner	184 (61.5)	
Partner alone	167 (57.0)	
Someone else	27 (32.1)	
Person deciding on large household expenses		< 0.001
Respondent alone	80 (44.9)	
Respondent and partner	141 (64.1)	
Partner alone	159 (60.2)	

Someone else	50 (37.0)	
Information on family planning		0.588
No knowledge	77 (44.8)	
Little knowledge	129 (56.6)	
More knowledge	76 (43.9)	

Table 7 represents the association between children ever born, age of women and pregnancy intention. Among all women having less than 2 children, the prevalence of unintended pregnancy is highest (42.2 %) in 15-24 years age group. Whereas among the women with more than two children, women in age groups 25-34 and 35-49 years had the highest (72 % and 70%, respectively) prevalence of unintended pregnancy.

Table 7: Pregnancy intention by children ever born and age of women

Children ever born	**Age of women**	**Pregnancy intention**	**P value**
≤2		Unintended (%)	0.001
	15-24	76 (42.2)	
	25-34	33 (22.8)	
	35-49	2 (20)	
>2	15-24	19 (45.2)	
	25-34	221 (72)	
	35-49	79 (69.3)	

Table 8 shows the crude and adjusted association of studied variables with unintended pregnancy. The association between the study variables and unintended pregnancy was observed using three models. In the first crude model the unintended pregnancy is more common with increase in women's age (OR 2.51) and for the women living in rural area (OR 1.89). Women living in Hill and Terai region were less likely (OR 0.60 and 0.49 respectively)to report unintended pregnancy than those living in Mountain region. Poorer women were more likely (OR 1.73) to experience unintended pregnancy than richer women. Women with some educational background (OR 0.31), women whose partners had secondary and higher education (OR 0.40) and women who start cohabitation after the

age of 20 years (OR 0.54) were less likely to experience unintended pregnancy. Similarly women giving first birth after the age of 20 years were less likely to experience unintended pregnancy (OR 0.58) than women giving birth before the age of 20.Women working in the agricultural sector (OR 1.96), those having more than two children (OR 4.47) and women having the history of terminated pregnancy (OR 1.70) were more likely to experience unintended pregnancy than non-working women, women having less than two children and those without the history of unintended pregnancy. Furthermore, women with little knowledge of family planning were more likely to experience unintended pregnancy (OR 1.60) than women with no knowledge of family planning. For women, whose health care is decided by mutual understanding of both the partner and respondent, unintended pregnancy was found to be more likely to occur (OR 2.12) than women alone deciding for her health care. Similar scenario is seen with the decision making on large household expenses.

When simultaneously adjusted with all the study variables (age, place of residence, region of residence, wealth index, educational level, partners educational level, occupation, age at cohabitation, age at first birth, children ever born, ideal number of children, terminated pregnancy, knowledge on family planning, person deciding on respondents health care and person deciding on large household expenses) in Model II, some changes in the odds ratio were observed. After adjustment, age was negatively associated with unintended pregnancy. Women in older age group were less likely (OR 0.22) to experience unintended pregnancy than women in younger age group. This result is contrasting with the result from model I. Women in poorer category were more likely to experience unintended pregnancy (OR 5.69) compared to women in the poorest category. However, the association is not linear between different categories. Compared to women with no education, women with primary education were less likely (OR 0.30) to experience unintended pregnancy. Women with more than two children were more likely (OR 5.76) and women having the history of unintended pregnancy were more likely (OR 2.16) to experience unintended pregnancy than women with less than two children and women with no such history. Person deciding on respondent's health care is overall associated with unintended pregnancy. However, it was not associated within its different category.

Model III describes the simultaneous adjustment of all the study variables by backward conditional method. This model filters and finally summarise the significantly associated variables with unintended pregnancy. In the final model, age of the women, wealth index,

educational level, number of previous births, history of terminated pregnancy and person deciding on respondent's health care were significantly associated with unintended pregnancy. Women in older age group were less likely (OR 0.18) to experience unintended pregnancy than women in the youngest age group. Women in the poorer wealth index category had highest odds (OR 4.83) of unintended pregnancy than women in any other category. Women with primary level of education were less likely (OR 0.32) to experience unintended pregnancy than women with no education at all. Women with more than two children ever born were more likely (OR 6.15) to experience unintended pregnancy than women with less than two children. Women with the history of terminated pregnancy were more likely (OR 2.85) to experience unintended pregnancy than women without history of unintended pregnancy.

Table 8: Odds ratio (OR) and 95% confidence interval (C.I) for unintended pregnancy among currently pregnant married women by socio demographic, pregnancy related and autonomy related variables

Independent variables	**Model I Crude OR**	***P value***	**Model II Adjusted OR**	***P value***	**Model III OR Backward Conditional Method**	***P value***
	OR (C.I)		**OR (C.I)**		**OR (C.I)**	
Age (years)		<0.001		0.012		<0.001
15-24	1		1		1	
25-34	1.71 (1.24-2.37)	0.001	0.65 (0.36-1.17)	0.156	0.58 (0.34-0.98)	0.043
35-49	2.51 (1.59-3.97)	<0.001	0.22 (0.08-0.61)	0.004	0.18 (0.08-0.38)	<0.001
Place of residence		<0.001		0.611		
Urban	1		1			
Rural	1.89 (1.30-2.75)	0.001	0.85 (0.46-1.56)			
Region of residence		0.001		0.749		
Mountain	1		1			
Hill	0.60 (0.41-0.86)	0.007	1.12 (0.65-1.95)	0.626		
Terai	0.49 (0.34-0.72)	<0.001	0.93 (0.49-1.78)	0.828		
Wealth index		<0.001		<0.001		<0.001
Poorest	1		1		1	
Poorer	1.73 (1.15-2.62)	0.008	5.69 (2.85-11.36)	<0.001	4.83 (2.64-8.86)	<0.001
Middle	0.57 (0.37-0.88)	0.011	1.22 (0.58-2.53)	0.587	0.90 (0.51-1.60)	0.729
Richer	0.65 (0.39-1.08)	0.103	3.48 (1.43-8.45)	0.007	2.45 (1.19-5.02)	0.014
Richest	0.21 (0.12-0.36)	<0.001	0.74 (0.26-2.05)	0.685	0.42 (0.20-0.87)	0.021
Educational		<0.001		<0.001		0.001

level						
No education	1		1		1	
Primary	0.31 (0.21-0.47)	<0.001	0.30 (0.16-0.57)	<0.001	0.32 (0.18-0.57)	<0.001
Secondary and higher	0.47 (0.34-0.68)	<0.001	1.05 (0.55-2.01)	0.845	0.94 (0.54-1.63)	0.833
Partners educational level		<0.001		0.091		
No education	1		1			
Primary	1.08 (0.74-1.56)	0.065	1.07 (0.59-1.98)	0.825		
Secondary and higher	0.40 (0.28-0.56)	<0.001	0.59 (0.32-1.17)	0.117		
Occupation		<0.001		0.124		
Not working	1		1			
Services/ Sales	0.65 (0.35-1.20)	0.169	0.44 (0.17-1.05)	0.065		
Agriculture	1.96 (1.39-2.77)	<0.001	1.02 (0.58-1.83)	0.885		
Age at cohabitation (years)		0.010		0.997		
≤20	1		1			
>20	0.54 (0.34-0.86)		1.00 (0.44-2.25)			
Age at first birth (years)		0.001		0.237		
≤20	1		1			
>20	0.58 (0.43-0.79)		0.70 (0.40-1.26)			
Children ever born		<0.001		<0.001		<0.001
≤2	1		1		1	
>2	4.47 (3.30-6.03)		5.76 (3.30-10.05)		6.15 (3.66-10.33)	
Ideal number of children		0.527		0.269		
None	1		1			
≤2	0.80 (0.52-1.22)	0.309	0.81 (0.45-1.45)	0.494		
>2	1.20 (0.51-2.86)	0.667	2.57 (0.71-9.25)	0.148		
Terminated pregnancy		0.003		<0.001		<0.001
No	1		1		1	
Yes	1.70 (1.19-2.43)		2.96(1.72-5.10)		2.85(1.70-4.78)	
Knowledge on Family planning		0.017		0.191		
No knowledge	1		1			
Little knowledge	1.60 (1.07-2.39)	0.020	1.49 (0.89-2.52)	0.128		
More knowledge	0.96 (0.63-1.47)	0.876	1.66 (0.92-3.01)	0.092		

Person deciding on respondents health care		<0.001		0.012		0.006
Respondent alone	1		1		1	
Respondent and partner	2.12 (1.38-3.26)	0.001	1.79 (0.91-3.53)	0.089	1.69 (0.96-3.03)	0.073
Partner alone	1.75 (1.14-2.69)	0.010	0.81 (0.42-1.63)	0.550	0.94 (0.54-1.66)	0.850
Someone else	0.65 (0.35-1.12)	0.118	0.48(0.19-1.22)	0.126	0.52 (0.24-1.13)	0.098
Person deciding on large household expenses		<0.001		0.553		
Respondent alone	1		1			
Respondent and partner	2.18 (1.46-3.27)	<0.001	1.05 (0.54-2.04)	0.885		
Partner alone	1.85 (1.26-2.72)	0.002	1.55 (0.82-2.93)	0.174		
Someone else	0.72 (0.45-1.13)	0.160	1.28 (0.59-2.76)	0.529		

Model I: Crude OR
Model II: Simultaneously adjusted for all variables used in analysis
Model III: Adjusted with Backward Conditional method

6. DISCUSSIONS

6.1 Main findings of the study

The aim of this study was to determine the prevalence and factors associated with unintended pregnancy among currently pregnant married women at the time of survey in Nepal. The study was restricted on currently pregnant married women at the time of survey and data was extracted from NDHS 2011.

More than half of the respondents has their current pregnancy unintended (mistimed 40%, unwanted 14%). Result indicates that age of women, educational status of women, economy of the household, children ever born and history of terminated pregnancy were significantly associated with unintended pregnancy in Nepal. Women in the oldest age group and with primary education were less likely to experience unintended pregnancy. Women in the poorer household, women with more than two children ever born and women having the history of terminated pregnancy in Nepal were more likely to experience unintended pregnancy.

Some changes in the direction of OR were observed between three different models. In first model, older women were more likely to experience unintended pregnancy than younger women whereas in second and third model, the direction is just opposite. This difference in different models is probably due to adjustments of variables and some interaction of variables within themselves. Wealth index was found to be significantly associated with unintended pregnancy in all models. However, there is difference in strength of association within different categories.

6.2 Relation to the previous studies

There have been various studies on the issue of unintended pregnancy across the world. One of the researches was carried out in the topic of "correlates of unintended pregnancy among married women in Nepal". That study was based on the data from NDHS 2006 and focuses on the currently pregnant women at the time of survey. Finding from that study reveals that 41 percent of the current pregnancies were unintended (Adhikari et al.2009) whereas this study reveals that more than half i.e. 54.5 percent of the current pregnancies were unintended. Since both of the study were conducted in same country and draw the data from the same source therefore this result is comparable. This shows that the trend of unintended pregnancy is increasing.

According to UNDP, Nepal has possibility of achieving the target of MDG 5 i.e. improving maternal health if some changes are made (UNDP 2013). One of the targets of MDG 5 is to achieve universal access to reproductive health including the use of family planning services (UN 2013). However, this finding posed a serious challenge to the achievement of MDG 5 in Nepal so far.

Similarly when the result is compared to the studies from other countries, it was found that Nepal is one of the countries with highest prevalence of unintended pregnancy. Study from USA revealed that nearly 52 percent of the teen pregnancies were unintended (Crosby et al. 2003). However, in this study only 170 pregnant women attending the first prenatal visit were approached which might not generalise the entire population. Study from Southern Ethiopia revealed that nearly 43 percent of currently pregnant married women had unintended pregnancy (Lako & Geda, 2011). This study included respondents whose recent pregnancy occurred five years back from the survey date therefore, there might be chances of potential recall bias. Furthermore, the study was conducted in only one district of Ethiopia, so there might be some questions of generalisation. In Jordan, unintended pregnancy was 40 percent (Johnson et al. 2004). Data for the study in Jordan was drawn from a nationally represented sample of ever married women, collected for the Jordan Population and family health survey. Therefore result from this study is comparable to the findings of our study. However, the analysis also included women giving recent birth five years prior to the survey thus, leaving some grounds for recall bias. Study from Japan revealed that nearly 47 percent of Japanese women experience unintended

pregnancy (Goto et al. 2002). However, this Japanese study was mostly focused on older women (35-49 years) attending the cervical and breast cancer screening clinics, therefore unintended pregnancy on the younger population was not studied. In Indonesia nearly 20 percent of all the births were the result of unintended pregnancy. The data was drawn from Indonesian Demographic and Health Survey and analysis included women giving births five years prior to the survey date (Jaeni et al. 2009).

Study from Indonesia revealed that the higher the age of mother, the higher the odds of experiencing an unintended pregnancy (Jaeni et al. 2009) whereas this study revealed that unintended pregnancy was more likely among younger women. Number of previous births or parity was strongly related with the odds of unintended pregnancy (Jaeni et al. 2009) which is similar to the findings of current study. However, one earlier study from Nepal found that with an increase in women's age, the odds of women experiencing unintended pregnancy also increases (Adhikari et al. 2009) which conflicts with the findings from this study. Study from USA revealed that women with less education were more likely to experience unintended pregnancy (Crosby et al. 2003) which coincides with the finding from current study.

6.3 Strengths of the study

This study is focused only with the current pregnant married women at the time of survey in Nepal. Data for the study has been extracted from NDHS 2011. NDHS data ensure the actual representativeness of the sample at the national level. Findings from the study are country specific that makes data of high reliability and validity. Due to this research has high validity that can be compared with the reference standard. The research committee that includes research scientists, medical doctor, sociologists etc. reviewed the questionnaire. It is comparable with the reference standard to measure the external validity of the research. It is taken as the reference data in national policymaking. It has also been used by many national and international organizations for the interventions and to measure the national health outcome. Pregnancy intention for the children that were already born was not been analysed to reduce the recall bias. This research topic itself is a new area

since research in this topic is very limited in Nepalese context. It also includes several outcomes that have not considered in the previous research. There were very few missing cases. Questionnaire used in the survey is very specific, approved and derived from standard core questionnaires to reflect the true issues on population and health issues. It was also pretested, translated into many different local languages to ensure the accuracy from the respondents. Response rate of all the survey is nearly 98%, which is extremely good in the research community. There were also very few missing data as such almost all the variables were analysed without being affected by missing data. Potential recall bias was addressed by only including the women who were pregnant at the time of survey rather than those giving births five years prior of the survey date. In this study, potential confounding factors were taken into account at analysis level by using multivariate models. However, there was the possibility of residual confounding due to unmeasured and unknown confounding factors.

6.4 Limitations of the study

Studies on why women have unintended pregnancy are very complicated from the fact that women's perception of whether the pregnancy was planned or wanted can change over time. Pregnancy intention asked in the early stage of pregnancy is more likely to get accurate answer than those at the late stage of pregnancy. This study doesn't consider the time of how long the women were pregnant. One of the major limitations of this study is that this study is unable to study the relationship between contraceptive use and unintended pregnancy due to lack of availability of data in contraceptive use. However, many studies across the world had already shown relationship between these two variables. One of the study variables is knowledge on family planning which was based on whether the respondents had heard about family planning from different sources, which might not reveal the knowledge of family planning. People might have just heard but not known. Since the study is cross sectional study, no causal relationship between the variables was observed.

6.5 Further Research

The information about the proportion of unintended pregnancy which is caused by not using contraception, contraceptive failure or inconsistent or inaccurate use would be more important for policy makers and program planners to develop strategy. The data source of the present study could not cover this type of information. Measurement of unintended pregnancy need to be refined to be more relevant to different social and cultural setting.

Information on women's feeling about pregnancy may change throughout the gestation period so qualitative approach is suitable to catch such issues. Furthermore, study can be made on the consequences of unintended pregnancy to look at the issue from the wider perspectives.

7. CONCLUSIONS AND RECOMMENDATIONS

This study focused on finding the prevalence of unintended pregnancy and factors associated with unintended pregnancy in Nepal. Results reveal that more than one in two pregnancies are unintended, which is a very challenging issue. Age of women, economic condition of the family, educational status of women, numbers of previous births and history of terminated pregnancy plays were found to be significant associated with the pregnancy intention of women. In conclusion, many factors contributed to the unintended pregnancy.

It is clear that the number of previous children a woman has had is a distinct determinant of whether or not the pregnancy in mistimed, unwanted, or wanted at the time of conception. Additional births increase the likelihood that a pregnancy will be unwanted and also increase the likelihood that a pregnancy will be mistimed. It may therefore be effective to focus family planning campaigns more intensively on those families that already have two or more children. Overall, there is a substantial demand among Nepalese women for effective contraceptive methods. This can be done by focusing on information and education about birth preparedness to the newly wed couples and pregnant mothers during antenatal check-ups. Women with more children and women with abortion needs should be identified and easy access of contraceptives and information related to contraceptive use should be provided to them. In this way infant and maternal mortality and morbidity as well as the need for abortion are decreased and the overall well-being of the family is maintained. In Nepal there is still practice of early marriage whereas in some communities even child marriage is practiced. Delay in age at marriage shifts the time for sexual activities especially in the Nepalese context therefore, government should address the issue of early marriage by investing in proper education and women empowerment.

Unintended pregnancy is clearly a public health issue, a gender issue, and a population issue; effectively addressing such a problem will result in multidimensional improvements for Nepalese women and Nepal as a whole.

ACKNOWLEDGEMENTS

I am very thankful to all those who directly and indirectly support me throughout my research process. This thesis was completed in University of Tampere, School of Health Sciences and several peoples assisted me throughout the writing process. First of all I would heartily like to thank my supervisor Dr. Tarja I. Kinnunen for her guidance and supervision throughout the entire research period. Her critical comment and motivation was crucial for finishing my research on time. Furthermore, she also provided me moral support throughout writing process.

Similarly, I would like to thank Dr. Subas Neupane, who was also the resource person for my research and he supported me morally and assisted me at any time of need. He also provides me with the data for the study and helped in the analysis. Likewise, I would like to thank Prof, Clas-Håkan Nygård, Head of Department, Prof, Matti Salo and Dr. Tapio Kirsi for their encouragement and support before and during the thesis process with suggestions and comments throughout the study period and 'thesis seminar' course. I cannot forget to thank Catarina Ståhle-Nieminen, international coordinator of school of Health Sciences for her moral and technical support during the entire study period. My thankfulness goes to all my classmates, especially Mr, Jimmy Antony for proof reading of my thesis and critically commenting which helped to improve my writing skill.

Finally, I would like to thank my parents and all the family members for their continuous emotional, moral and financial support, especially my husband Mr. Kishor Hadkhale for his continuous encouragement, constructive feedback and moral support throughout my study.

REFERENCES

Adhikari, R., Soonthorndhada, K. & Prasartkul, P. 2009, "Correlates of unintended pregnancy among currently pregnant married women in Nepal", *BMC International Health and Human Rights,* vol. 9, no. 1, pp. 17.

Black, K.I., Gupta, S., Rassi, A. & Kubba, A. 2010, "Why do women experience untimed pregnancies? A review of contraceptive failure rates", *Best Practice & Research in Clinical Obstetrics & Gynaecology,* vol. 24, no. 4, pp. 443-455.

Che, Y. & Cleland, J. 2004, "Unintended pregnancy among newly married couples in Shanghai.", *International Family Planning Perspectives,* vol. 30, no. 1, pp. 6-11.

Cheng, D., Schwarz, E.B., Douglas, E. & Horon, I. 2009, "Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviours.", *Contraception,* vol. 79, no. 3, pp. 194-198.

Crosby, R.A., Di Clemente, R.J., Wingood, G.M., Rose, E. & Lang, D. 2003, "Correlates of unplanned and unwanted pregnancy among African-American female teens.", *American Journal of Preventive Medicine,* vol. 25, no. 3, pp. 255-258.

David, H.P. 2011, "Born unwanted: mental health costs and consequences.", *American Journal of Orthopsychiatry,* vol. 81, no. 2, pp. 184-192.

Department of Health Services, Ministry of Health and Population, 2011, Annual Report 2009-2010, Kathmandu, Nepal.

Eggleston, E. 2000, "Unintended pregnancy and women's use of prenatal care in Ecuador.", *Social science & medicine,* vol. 51, no. 7, pp. 1011-1018.

Eggleston, E., Tsui, A.O. & Kotelchuck, M. 2001, "Unintended pregnancy and low birth weight in Ecuador.", *American Journal of Public Health,* vol. 91, no. 5, pp. 808-810.

Finer, L.B. 2010, "Unintended pregnancy among U.S. adolescents: accounting for sexual activity.", *Journal of Adolescent Health,* vol. 47, no. 3, pp. 312-314.

Gessessew, A. 2010, "Abortion and unwanted pregnancy in Adigrat Zonal Hospital, Tigray, North Ethiopia.", *African Journal of Reproductive Health*, vol. 14, no. 3, pp. 183-188.

Goto, A., Yasumura, S., Reich, M.R. &Fukao, A. 2002, "Factors associated with unintended pregnancy in Yamagata, Japan.", *Social science & medicine*, vol. 54, no. 7, pp. 1065-1079.

Goto, A., Yasumura, S., Yabe, J., Anazawa, Y. & Hashimoto, Y. 2005, "Association of pregnancy intention with parenting difficulty in Fukushima, Japan.", *Journal of Epidemiology*, vol. 15, no. 6, pp. 244-246.

Henderson, D. 2009, "A third of women in UK who have an unintended pregnancy blame contraceptive failure.", *BMJ*, vol. 339, pp. b2975.

Johnson, Kiersten, Osama al Zoubi, and Martin Wulfe. 2004. *Mistimed and Unwanted Pregnancies in Jordan*. Calverton, Maryland, USA: Jordan Department of Statistics and ORC Macro.

Klima, C.S. 1998, "Unintended pregnancy. Consequences and solutions for a worldwide problem", *Journal of nurse-midwifery*, vol. 43, no. 6, pp. 483-491

MEASURE DHS, *Wealth Index*, viewed on 07 May 2013, from http://www.measuredhs.com/topics/Wealth-Index.cfm

MEASURE DHS, *Recode Manual*, viewed on 18 July 2013, from http://www.measuredhs.com/pubs/pdf/DHSG4/Recode6_DHS_22March2013_DHSG4.pdf .

Ministry of Health and Population (MOHP) [Nepal], New ERA, and ICF International Inc. 2012.*Nepal Demographic and Health Survey 2011*.Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland.

Mosher, W.D., Jones, J. & Abma, J.C. 2012, "Intended and unintended births in the United States: 1982-2010", *National health statistics reports*, vol. (55), no. 55, pp. 1-28.

Myhrman, A., Rantakallio, P., Isohanni, M., Jones, P. & Partanen, U. 1996, "Unwantedness of a pregnancy and schizophrenia in the child.", *British Journal of Psychiatry*, vol. 169, no. 5, pp. 637-640.

Sable, M.R., Washington, C.C., Schwartz, L.R. & Jorgenson, M. 2007, "Social well-being in pregnant women: intended versus unintended pregnancies.", *Journal of Psychosocial Nursing & Mental Health Services,* vol. 45, no. 12, pp. 24-31.

Santelli, J., Rochat, R., Hatfield-Timajchy, K., Gilbert, B.C., Curtis, K., Cabral, R., Hirsch, J.S., Schieve, L. & Unintended Pregnancy Working Group 2003, "The measurement and meaning of unintended pregnancy",*Perspectives on sexual and reproductive health,* vol. 35, no. 2, pp. 94-101.

Singh, A., Singh, A. & Mahapatra, B. 2013, "The consequences of unintended pregnancy for maternal and child health in rural India: evidence from prospective data", *Maternal and child health journal,* vol. 17, no. 3, pp. 493-500.

Shapiro-Mendoza, C., Selwyn, B.J., Smith, D.P. & Sanderson, M. 2005, "Parental pregnancy intention and early childhood stunting: findings from Bolivia.", *International journal of epidemiology,* vol. 34, no. 2, pp. 387-396.

Silverman, J.G., Gupta, J., Decker, M.R., Kapur, N. & Raj, A. 2007, "Intimate partner violence and unwanted pregnancy, miscarriage, induced abortion, and stillbirth among a national sample of Bangladeshi women.",*BJOG: An International Journal of Obstetrics & Gynaecology,* vol. 114, no. 10, pp. 1246-1252.

Taylor, J.S. & Cabral, H.J. 2002, "Are women with an unintended pregnancy less likely to breastfeed?", *Journal of Family Practice,* vol. 51, no. 5, pp. 431-436.

UNDP, *Millennium Development Goal 5*, viewed on 18 July, from http://www.undp.org/content/nepal/en/home/mdgoverview/overview/mdg5/.

UNDP, *Millennium Goals,* viewed on 18 July, from http://www.un.org/millenniumgoals/maternal.shtml.

WHO, *Family Planning,* viewed on 11 March 3013, from http://www.who.int/mediacentre/factsheets/fs351/en/index.html.

WHO, *Why do so many women still die in pregnancy or childbirth?,* Viewed on 11 march 2013, from http://www.who.int/features/qa/12/en/index.html.

WHO, *Adolescent pregnancy*, viewed on 12 March 2013, from http://www.who.int/mediacentre/factsheets/fs364/en/index.html

WHO, *countries/npl*, viewed on 12 March 2013, from http://www.who.int/countries/npl/en/

WHO, *Why do so many women still die in pregnancy or childbirth?*,, viewed on 11 March 2013, from http://www.who.int/features/qa/12/en/index.html.

WHO, *Breastfeeding*, viewed on 12 March 2013, from http://www.who.int/mediacentre/news/releases/2013/world_breastfeeding_week_20130730/en/